Claims

1. A soluble molecule capable of binding to the human CD40 antigen and to the human CD86 antigen, said antigens being located on the surface of human lymphocytes.

2. A soluble binding molecule according to claim 1, which is an antibody containing an antigen-binding site of an antibody to CD40 and an antigen-binding site of an antibody to CD86.

3. An antibody molecule according to claim 2, which is a trispecific diabody capable of binding to CD40 and to both CD80 and CD86, in particular by containing the antigen-binding site of an antibody to CD40 and the antigen-binding site of an antibody which is cross-reactive with CD80 and CD86.

4. An antibody molecule according to claim 2, which is a bispecific diabody capable of binding to human CD40 and to human CD86, in particular by containing the antigen-binding site of an antibody to CD40 and the antigen-binding site of an antibody to CD86.

5. An antibody molecule according to claim 2, which is a trispecific triabody capable of binding to CD40, CD80 and CD86, in particular by containing the antigen-binding site of an antibody to CD40, the antigen-binding site of an antibody to CD80 and the antigen-binding site of an antibody to CD86.

6. A soluble binding molecule according to claim 1 or 3, which is capable of binding to CD86 by means of the extracellular domain of human CTLA-4.

7. An antibody according to claim 4 or 5, wherein the antibody to CD86 is the antibody Fun-1.

8. An antibody according to any one of claims 2 to 5 wherein the antibody to CD40 is an antagonistic antibody to CD40.

9. An antibody according to any one of claims 2-5, wherein the antibody to CD40 is a non-stimulatory antagonistic antibody to CD40.

10. A recombinant vector comprising the nucleotide sequences encoding the binding molecule fragments according to any one of claims 1-5 operably linked to regulating sequences capable of expressing the antibody molecule in a host cell.

11. A host cell stably transformed with the vector according to claim 10.

12. A method of producing a recombinant molecule capable of binding to the human CD40 antigen and to at least the human CD86 antigen, comprising culturing a host cell and isolating the binding molecule from the culture medium.

13. A pharmaceutical composition for induction of T cell tolerance, containing a therapeutically effective amount of the binding molecule according to any one of claims 1-5 and a pharmaceutically acceptable carrier.

14. A method for treating T cell mediated immune responses, the method comprising administering to a patient in need of such treatment a therapeutically effective amount of a pharmaceutical composition according to claim 13.

15. A method for preventing allograft transplant rejection, the method comprising administering to a patient in need of such treatment a therapeutically effective amount of a pharmaceutical composition according to claim 13.

16. A method for preventing xenotransplant rejection, the method comprising administering to a patient in need of such treatment a therapeutically effective amount of a pharmaceutical composition according to claim 13.

17. A method for the induction of T cell tolerance, the method comprising administering to a patient in need of such treatment a therapeutically effective amount of a pharmaceutical composition according to claim 13.

18. A method for the induction of allo-transplant or xeno-transplant tolerance, the method comprising administering to a patient in need of such treatment a therapeutically effective amount of a pharmaceutical composition according to claim 13.

19. A method for preventing or treatment of autoimmune diseases such as rheumatoid arthritis, multiple sclerosis and psoriasis, the method comprising administering to a patient in need of such treatment a therapeutically effective amount of a pharmaceutical composition according to claim 13.

20. A method for treating T cell mediated immune responses to gene therapy vectors or vehicles, the method comprising administering to a patient in need of such treatment a therapeutically effective amount of a pharmaceutical composition according to claim 13.

21. A method for treating T cell mediated immune responses to therapeutic molecules, the

method comprising administering to a patient in need of such treatment a therapeutically effective amount of a pharmaceutical composition according to claim 13.

22. Gene constructs encoding ligands capable of binding to CD40 and CD86, or to CD40, CD80 and CD86.

23. The gene constructs of claim 22 wherein the ligands encode triabodies or diabodies.

24. The constructs of claim 22 wherein the ligand capable of binding to CD86 is a CTLA4-Ig fusion protein.

25. The gene constructs of any of claims 22 to 24 wherein the gene constructs are incorporated in a plasmid or a viral vector.

26. A method of transfecting cells with the gene constructs of any of claims 22 to 24.

27. Cells transfected or infected with the gene constructs of any of claims 22 to 24.

28. The method of claim 25 wherein the transfection or infection is done *ex vivo* or *in vivo.*

29. The method of claim 27 wherein the transfection is done *ex vivo* by electroporation, calcium phosphate transfection, micro-injection or by incorporating the gene constructs into suitable liposomes.

30. The method of claim 27 wherein the infection is done *in vivo* or *ex vivo* by incorporating the gene constructs into a retrovirus, adenovirus or a parvovirus vector, or by incorporating the gene constructs, or the gene constructs with a viral vector, into a suitable liposome.